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UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/894,392	06/28/2001	Eric J. Horvitz	MS171134.1	6446

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EXAMINER
GODDARD, BRIAN D

ART UNIT	PAPER NUMBER
2171	

DATE MAILED: 10/06/2003   *H*

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

		Application No.	Applicant(s)
Office Action Summary		09/894,392	HORVITZ, ERIC J.
		Examiner	**Art Unit**
		Brian Goddard	2171

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>21 August 2003</u> .

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-45</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-45</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>28 June 2001</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____ .

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)	4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) ☐ Notice of Informal Patent Application (PTO-152)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>2,3</u> .	6) ☐ Other:

DETAILED ACTION

Claim Objections

1.   Claim 9 is objected to under 37 CFR 1.75(c), as being of improper dependent

form for failing to further limit the subject matter of a previous claim. Applicant is

required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper

dependent form, or rewrite the claim(s) in independent form. Specifically, claim 9 fails

to further limit the subject matter of claim 7, from which it depends, because it merely

repeats a limitation recited in claim 7.

2.   Claims 1, 4, 9, 18-19, 21, 24, 26, 29, 33-35, 37-40 and 42-43 are objected to

because of the following informalities: Each of these claims uses the language "and/or"

in the context of a list of limitations, which is improper because it leaves the scope of the

claims indefinite. Specifically, it is unclear whether "and" is claimed (all limitations must

be present) OR whether "or" is claimed (only one limitation must be present). Both are

not possible in the context of a single claim without blurring its scope. For examining

purposes in the interest of compact prosecution, the examiner assumes that "or" is

claimed wherever "and/or" is recited. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3.   Claims 1-3 and 11-13 are rejected under 35 U.S.C. 102(b) as being anticipated

by U.S. Patent No. 5,193,171 to Shinmura et al.

Referring to claim 1, Shinmura discloses a system that facilitates maintaining an

item as claimed. See Figures 1-4 and the corresponding portions of Shinmura's

specification for this disclosure. In particular, Shinmura teaches "a system [See Fig. 1]

that facilitates maintaining an item [file], comprising:

a first data store [9] adapted to store the item in an active state;

a second data store [10] adapted to store the item in an archived state; and

an inference system [1] adapted to inferentially determine [See Figs. 3-4]

whether to store the item in an active or archived state based at least in part upon

information related to [See discussion of Step 47 (column 6, lines 34-47)] a property of

the item [size], a property of a user [user designation as archive file] or extrinsic data

[least recently used]" as claimed.

Referring to claim 2, Shinmura discloses a system that facilitates maintaining an

item as claimed. See Figures 1-2 and the corresponding portions of Shinmura's

specification for this disclosure. Shinmura teaches the system of claim 1, as above,

"further comprising: a property log [management catalogue 11] operative to store as

evidence at least one of: information related to a property of the item [size], a property

of a user and extrinsic data [See above], the inference system adapted to consult the property log when making an inferential determination [See discussion of Step 47]" as claimed.

Referring to claim 3, Shinmura discloses a system that facilitates maintaining an item as claimed. See Figures 3-4 and the corresponding portions of Shinmura's specification for this disclosure. Shinmura teaches the system of claim 2, as above, "the inference system further basing determinations upon a probability of user access [choosing a file that has not been used or is least recently used (oldest referenced) {See column 6, lines 37-43}] to the item" as claimed.

Claim 11 is rejected on the same basis as claim 1. See the discussion regarding claim 1 above for the details of this disclosure.

Claim 12 is rejected on the same basis as claim 3, in light of the basis for claim 11. See the discussions regarding claims 1-3 and 11 above for the details of this disclosure.

Referring to claim 13, Shinmura discloses the utility based item archiving system as claimed. See Figures 3-4 and the corresponding portions of Shinmura's specification for this disclosure. Shinmura teaches the system of claim 12, as above, being temporally sensitive such that a determined utility of an item and storage inferences drawn therefrom [archive/recall processing] are continually updated over time [every time active storage space runs out or a file is added that is larger than the available active space] as claimed.

4.   Claims 1-4 and 11-13 are rejected under 35 U.S.C. 102(e) as being anticipated

by U.S. Patent No. 6,199,103 to Sakaguchi et al.

Referring to claim 1, Sakaguchi discloses a system that facilitates maintaining an

item as claimed. See Figures 1-5 and the corresponding portions of Sakaguchi's

specification for this disclosure. In particular, Sakaguchi teaches "a system that

facilitates maintaining an item, comprising:

a first data store [5] adapted to store the item in an active state;

a second data store [6] adapted to store the item in an archived state; and

an inference system [2] adapted to inferentially determine whether to store the

item in an active or archived state based at least in part upon information [3] related to a

property of the item, a property of a user or extrinsic data" as claimed.

Referring to claim 2, Sakaguchi discloses the system that facilitates maintaining

an item as claimed. See Figures 1-3 and the corresponding portions of the specification

for this disclosure. Sakaguchi teaches the system of claim 1, as above, "further

comprising: a property log [3] operative to store as evidence at least one of: information

related to a property of the item, a property of a user and extrinsic data, the inference

system adapted to consult [Loop for each condition between ST1 and ST2] the property

log when making an inferential determination" as claimed.

Referring to claim 3, Sakaguchi discloses the system that facilitates maintaining

an item as claimed. See Figures 1-3 and the corresponding portions of the specification

for this disclosure. Sakaguchi teaches the system of claim 2, as above, the inference

system further basing determinations upon a probability of user access [junk degree (or non-junk degree)] as claimed.

Referring to claim 4, Sakaguchi discloses the system that facilitates maintaining an item as claimed. See Figures 1-3 and the corresponding portions of the specification for this disclosure. Sakaguchi teaches the system of claim 3, as above, "wherein a property of the item, a property of a user or extrinsic data undergo probabilistic computations [step ST2] to ascertain a probability of user access" as claimed.

Claim 11 is rejected on the same basis as claim 1. See the discussion regarding claim 1 above for the details of this disclosure.

Claim 12 is rejected on the same basis as claim 3, in light of the basis for claim 11. See the discussions regarding claims 1-3 and 11 above for the details of this disclosure.

Referring to claim 13, Sakaguchi discloses the utility based archiving system as claimed. See Figures 1-3 and the corresponding portions of the specification for this disclosure. Sakaguchi teaches the system of claim 12, as above, being temporally sensitive [through learning section (7)] such that a determined utility of an item [junk (or non-junk) degree] and storage inferences drawn therefrom are continually updated over time as claimed.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set
forth in section 102 of this title, if the differences between the subject matter sought to be patented and
the prior art are such that the subject matter as a whole would have been obvious at the time the
invention was made to a person having ordinary skill in the art to which said subject matter pertains.
Patentability shall not be negatived by the manner in which the invention was made.

5.   Claims 4-6, 14-21, 23-28, 30-37 and 39-45 are rejected under 35 U.S.C. 103(a)

as being unpatentable over Shinmura in view of the article entitled "Continual

Computation Policies for Utility-Directed Prefetching" by Horvitz (hereinafter 'Horvitz').

Referring to claim 4, Shinmura's system does not explicitly perform "probabilistic

computations to ascertain a probability of user access" as claimed. That is, Shinmura's

probability of user access is not necessarily calculated by "probabilistic computations",

but is instead determined by past user accesses. Specifically, a file that has not been

accessed by a particular user, or a file that is least recently accessed out of all of a

user's files, has the lowest probability of user access in Shinmura's determination.

Horvitz discloses a system and method similar to that of Shinmura, wherein

archived files are pre-fetched into active storage if they have a high probability of user

access, but kept in archive storage if they have a low probability of user access.

Specifically, Horvitz teaches performing probabilistic computations on a property of the

item, a property of a user or extrinsic data to ascertain a probability of user access to

the item as claimed. See section 3, pages 179-181, for the details of this disclosure.

It would have been obvious to one of ordinary skill in the art at the time the

invention was made to implement Horvitz' probabilistic computations in Shinmura's

system to determine the probability of user access to a specific item as a basis for

determination to archive the item or keep it active. One would have been motivated to

do so in order to provide a more accurate, yet cost-effective means for determining probability of user access, instead of a simple choice of a non/least accessed item.

Referring to claims 5 and 6, the system and method of Shinmura in view of Horvitz as applied to claim 4 above discloses the invention as claimed. Shinmura does not explicitly state that the inference system bases archive/migrate determinations upon a value density of the item as claimed. However, Shinmura's (as modified by Horvitz) determinations are based on both a probability of user access (See above) to an item and the size of the item (See Shinmura's description of Step 47), which are the sole constituents of applicant's claimed "value density". Therefore, Shinmura provides direct suggestion for basing archive determinations upon a value density of the item as claimed.

Horvitz further teaches basing determinations upon a value density of the item as claimed. See sections 2.4-2.5 on page 179 for the details of this disclosure. Specifically, Horvitz' decision to migrate an item is based on the flux of the item, Ψ(segment), which is the value density of an item, as claimed, given a constant transmission rate (R) and a *Value*(Component) of 1.0 for a full file ['the maximal content for the document' (See lines 2-9 of the second column on page 179)]. That is, Horvitz' equation of Section 2.5 can be reduced such that the flux [Ψ(segment)] divided by the transmission rate [R] = value density = the probability of user access given evidence [p(D|E)] divided by the size of the item [*Size*(Component)] as claimed in claim 6, where *Value*(Component) = 1.0 for a full file migration and the transmission rate (R) is constant (and thus factored out).

In using Horvitz' probabilistic computations in the system and method of Shinmura as above, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement Horvitz' calculation of a value density in Shinmura's (as modified by Horvitz) system as a basis for determination to archive the item or keep it active. One would have been motivated to do so because of the direct suggestion provided by Shinmura, as above, in view of Shinmura's silence on the detailed calculations used in decision step 47.

Claims 14-15 are rejected on the same basis as claims 5-6, in light of the basis for claim 13 above. See the discussions regarding claims 1-6 and 11-13 above for the details of this disclosure.

Referring to claims 16-17, the system and method of Shinmura in view of Horvitz as applied to claim 15 above discloses the invention as claimed. See Figures 1-4 and the corresponding portions of Shinmura's specification for this disclosure. Shinmura's (as modified by Horvitz) system employs a knapsack packing analysis [Space Allocation Processing] to determine how to store the item by considering respective value densities of items [See above] to determine which items to store as active and which items to archive [archive/recall processing] as claimed.

Claim 18 is rejected on the same basis as claim 5. See the discussions regarding claims 1-5 above for the details of this disclosure.

Claim 19 is rejected on the same basis as claim 13, in light of the basis for claim 18 above. See the discussions regarding claims 13 and 18 for the details of this disclosure.

Claim 20 is rejected on the same basis as claim 16, in light of the basis for claim

19. See the discussions regarding claims 16 and 19 for the details of this disclosure.

Claim 21 is rejected on the same basis as claim 5. See the discussions

regarding claims 1-5 for the details of this disclosure.

Claim 23 is rejected on the same basis as claim 18. See the discussion

regarding claim 18 above for the details of this disclosure.

Claims 24-26 are rejected on the same basis as claim 5. See the discussions

regarding claims 1-5 above for the details of this disclosure.

Claims 27-28 are rejected on the same basis as claim 13, in light of the basis for

claim 26. See the discussions regarding claims 13 and 26 above for the details of this

disclosure.

Referring to claim 30, the system and method of Shinmura in view of Horvitz as

applied to claim 24 above discloses the invention as claimed. See Figures 1-4 and the

corresponding portions of Shinmura's specification, as well as sections 2.4-2.5 of

Horvitz' article for this disclosure. The system of Shinmura in view of Horvitz further

comprises an interactive user interface [14] as claimed.

Referring to claims 31-32, the system and method of Shinmura in view of Horvitz

as applied to claim 30 above discloses the invention as claimed. The UI of Shinmura in

view of Horvitz includes a selection element operative to allow a condition to be

enabled/disabled and an entry element operative to allow a condition to be configured

as claimed. See Shinmura's discussion of Steps 40-48 as well as section 2.5 of Horvitz'

article for the details of this disclosure.

Claims 33-35 are rejected on the same basis as claim 16. See the discussions regarding claims 1-5 and 16 above for the details of this disclosure.

Claims 36-37 are rejected on the same basis as claim 13, in light of the basis for claim 35. See the discussions regarding claims 13 and 35 above for the details of this disclosure.

Claims 39-41 are rejected on the same basis as claim 16. See the discussions regarding claims 1-5 and 16 above for the details of this disclosure.

Claims 42-44 are rejected on the same basis as claim 5. See the discussions regarding claims 1-5 above for the details of this disclosure.

Claim 45 is rejected on the same basis as claim 32. See the discussions regarding claims 30-32 above for the details of this disclosure.

6.   Claims 7-10, 22, 29 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinmura in view of Horvitz as applied to claim 6 above, and further in view of Sakaguchi et al.

Referring to claim 7, Shinmura's (as modified by Horvitz) inference system is not explicitly operable to determine whether the item should be regarded as a one-shot item as claimed. However, Shinmura's (as modified by Horvitz) system does detect items that have been accessed once but not accessed again after that. See the description of steps 46-48 in Shinmura's specification for this disclosure. This provides suggestion for detection of one-shot items for earlier archival so less active memory space is used.

Sakaguchi, as shown above, discloses a system and method similar to that of Shinmura. Sakaguchi further teaches an inference system [2] operable to determine whether an item should be regarded as a one-shot item [junk mail] based upon at least one of: a property of the item, a property of a user, extrinsic data, a determined probability and value density [See discussion of element 3] as claimed.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add Sakaguchi's junk mail detection processing to the system of Shinmura in view of Horvitz so as to determine whether an item should be regarded as a one-shot item, to obtain the invention as claimed. One would have been motivated to do so in the interest of archiving one-shot items immediately after access so they do not use active storage space necessary for other, more important files. Further motivation for the combination comes from Shinmura's suggestion, as provided above.

Referring to claim 8, the system and method of Shinmura in view of Horvitz and Sakaguchi as applied to claim 7 above discloses the invention as claimed. See Figure 1 and the corresponding portion of Sakaguchi's specification, as well as Figures 1-3 and the corresponding portions of Shinmura's specification for this disclosure. Sakaguchi's one-shot item processing as added to the system of Shinmura in view of Horvitz teaches the system of claim 7, as above, operable to store a one-shot item [junk mail] in an archived state [See steps 2, 4 and 6] after it is accessed [See step 1] as claimed.

Claim 9 is rejected on the same basis as claim 7. See the discussion regarding claim 7 for the details of this disclosure.

Referring to claim 10, the system and method of Shinmura in view of Horvitz and Sakaguchi as applied to claim 7 above discloses the invention as claimed. See Figures 1-5 and the corresponding portions of Sakaguchi's specification for this disclosure. Sakaguchi's one-shot item processing, as added to the system of Shinmura in view of Horvitz, further comprises a learning system [7] operative to act upon the inference system [2] and modify inferences made thereby based upon at least one of: a property of the item, a property of a user, extrinsic data, a determined probability and a value density [See Fig. 3] as claimed.

Claim 22 is rejected on the same basis as claim 8, in light of the basis for claim 21 above. See the discussions regarding claims 7-8 and 21 for the details of this disclosure.

Claim 29 is rejected on the same basis as claim 10, in light of the basis for claim 28 above. See the discussions regarding claims 7, 10 and 28 for the details of this disclosure.

Claim 38 is rejected on the same basis as claim 10, in light of the basis for claim 37 above. See the discussions regarding claims 7, 10 and 37 for the details of this disclosure.

Conclusion

7.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent No. 5,377,354 to Scannell et al. and 5,832,522 to Blickenstaff et al.

are both considered particularly pertinent to applicant's claimed invention.

The remaining prior art of record is considered pertinent to applicant's disclosure,

and/or portions of applicant's claimed invention.

8.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Brian Goddard whose telephone number is 703-305-

7821. The examiner can normally be reached on M-F, 9 AM - 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Safet Metjahic can be reached on 703-308-1436. The fax phone number for

the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or

proceeding should be directed to the receptionist whose telephone number is 703-305-

3900.

bdg

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SUPERVISORY PATENT EXAMINER
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